Test - 02

Ultimate KCET Crash Course 2026

BOTANY

Q1 Match the following:

A.	Monera	P.	Absence of cell wall
B.	Protista	Q.	Presence of chitin in wall
C.	Fungi	R.	Prokaryotic organization
D.	Animalia	S.	Mostly unicellular eukaryotes

(A) $A-R, B-S, C-Q, D-P$
(B) $A-S, B-R, C-P, D-Q$
(C) $A-Q, B-S, C-R, D-P$
(D) $A-R, B-Q, C-S, D-P$

Q2 Which sequence correctly represents the events in sexual reproduction of fungi?
(A) Karyogamy Plasmogamy Meiosis
(B) Plasmogamy Karyogamy Meiosis
(C) Meiosis Plasmogamy Karyogamy
(D) Plasmogamy Meiosis Karyogamy

Q3 Which of the following correctly differentiates viruses from cellular organisms?
(A) Ability to reproduce independently
(B) Presence of both DNA and RNA
(C) Lack of cellular organization
(D) Ability to perform metabolism

Q4 In a group of photosynthetic organisms, classification is primarily influenced by pigment composition, reserve food and structural organization. Identify the correct combination.
(A) Chlorophyll a & c + laminarin storage + marine dominance
(B) Chlorophyll a & b + floridean starch + absence of flagella
(C) Chlorophyll a & d + starch storage + freshwater dominance
(D) Chlorophyll a & b + laminarin + biflagellate spores

Q5 Match the following:

A.	Racemose	i.	Older flowers at apex
B.	Cymose	ii.	Growth limited
C.	Acropetal	iii.	Continuous growth
D.	Basipetal	iv.	Older flowers at base

(A) A-iii, B-ii, C-iv, D-i
(B) A-ii, B-iii, C-i, D-iv
(C) A-iii, B-ii, C-i, D-iv
(D) A-iv, B-ii, C-iii, D-i

Q6 In monocot seed, the protective sheath covering the plumule is known as:
(A) Coleorhiza (B) Scutellum
(C) Aleurone layer (D) Coleoptile

Q7 Assertion (A): Bulliform cells help in reducing water loss.
Reason (R): These cells become flaccid during water stress causing leaf rolling.
(A) Both A and R correct, R explains A
(B) Both correct but R not explanation
(C) A correct, R incorrect
(D) A incorrect, R correct

Q8 Statement I: Membrane fluidity allows lateral movement of embedded proteins.
Statement II: This property is essential for processes like growth and secretion.

(A) Both statements correct and II explains I
(B) Both correct but II not explanation
(C) I correct, II incorrect
(D) I incorrect, II correct

Q9 Statement I: Rough endoplasmic reticulum is associated with protein synthesis.
Statement II: It lacks ribosomes on its surface.
(A) Both correct and II explains I
(B) Both correct but II not explanation
(C) I correct, II incorrect
(D) I incorrect, II correct

Q10 A proliferating eukaryotic cell shows doubling of DNA content without change in chromosome number. Identify the stage and the correct explanation.
(A) G1 – active metabolism without replication
(B) S – DNA duplication with unchanged chromosome count
(C) G2 – protein synthesis and chromosome doubling
(D) M – chromatid separation with DNA doubling

Q11 Match the following:

Column I		Column II	
A.	Zygotene	i.	Crossing over
B.	Pachytene	ii.	Synapsis
C.	Diplotene	iii.	Chiasmata visible
D.	Diakinesis	iv.	Terminalisation

(A) A-ii, B-i, C-iii, D-iv
(B) A-i, B-ii, C-iv, D-iii
(C) A-ii, B-iii, C-i, D-iv
(D) A-iv, B-i, C-ii, D-iii

Q12 In the Calvin cycle, the primary acceptor of carbon dioxide is:
(A) Phosphoenol pyruvate
(B) Ribulose bisphosphate
(C) Oxaloacetic acid
(D) Phosphoglycerate

Q13 In the cyclic pathway of respiration, subtrate-level phosphorylation occurs at which step?
(A) Conversion of citrate to isocitrate
(B) Conversion of succinyl-CoA to succinate
(C) Conversion of malate to oxaloacetate
(D) Conversion of α-ketoglutarate to succinyl-CoA

Q14 Respiratory quotient (RQ) varies with substrate type. Which of the following is correct?
(A) RQ = 1 for fats
(B) RQ < 1 for carbohydrates
(C) RQ ≈ 0.7 for lipids
(D) RQ > 1 for proteins

Q15 Match the following:

Column I		Column II	
A.	Auxin	i.	Stress response
B.	Gibberellin	ii.	Stem elongation
C.	Cytokinin	iii.	Cell division
D.	Abscisic acid	iv.	Root initiation

(A) A-iv, B-ii, C-iii, D-i
(B) A-iii, B-iv, C-i, D-ii
(C) A-ii, B-i, C-iv, D-iii
(D) A-i, B-iii, C-ii, D-iv

Answer Key

Q1	A
Q2	B
Q3	C
Q4	A
Q5	A
Q6	D
Q7	A
Q8	A
Q9	C
Q10	B
Q11	A
Q12	B
Q13	B
Q14	C
Q15	A

Hints & Solutions

Note: scan the QR code to watch video solution

Q1 Text Solution:

Key Concept: Kingdom traits

Explanation:

1. Monera includes organisms lacking a true nucleus.
2. Protista includes single-celled eukaryotic organisms.
3. Fungi possess walls made of chitin.
4. Animal cells do not have any cell wall.
5. These features distinguish the five kingdoms fundamentally.

Video Solution:

Q2 Text Solution:

Key Concept: Fungal reproduction

Explanation:

1. Initially, cytoplasm of two cells fuses.
2. This is followed by fusion of nuclei.
3. A diploid stage is formed temporarily.
4. Meiosis restores haploid condition.
5. This sequence ensures genetic variation.

Video Solution:

Q3 Text Solution:

Key Concept: Acellular nature

Explanation:

1. Viruses lack cellular structure.
2. They cannot carry out metabolic activities independently.
3. They depend entirely on host machinery.
4. They contain either DNA or RNA, not both.
5. Thus, absence of cellular organization is defining.

Video Solution:

Q4 Text Solution:

Key Concept: Algal classification

Explanation:

- Pigment composition determines light absorption efficiency.
- Brown forms possess chlorophyll a and c along with fucoxanthin.
- Food is stored as laminarin or mannitol.
- Mostly found in marine environments.
- Other options mix incorrect pigments and storage products.

Video Solution:

Q5 Text Solution:

Key Concept: Inflorescence

Explanation:

1. Racemose shows continuous axis growth.
2. Cymose terminates in a flower.
3. Acropetal arrangement has younger flowers at top.
4. Basipetal shows older flowers at top.
5. These patterns define flowering sequence.

Video Solution:

Q6 Text Solution:

Key Concept: Seed structure

Explanation:

1. Plumule represents embryonic shoot.
2. It requires protection during germination.
3. A sheath-like structure encloses it.
4. This structure is called coleoptile.
5. It ensures safe emergence above soil.

Video Solution:

Q7 Text Solution:

Key Concept: Leaf adaptation

Explanation:

Specialized cells respond to water availability.

Loss of turgidity leads to inward curling.

Curling reduces exposed surface area.

Minimizes transpiration.

Adaptation helps survival in stress conditions.

Video Solution:

Q8 Text Solution:

Key Concept: Membrane fluidity

Explanation:

Lipid bilayer exhibits dynamic nature.

Proteins can move within membrane plane.

Enables interactions and transport processes.

Supports cellular functions like division.

Fluidity is crucial for adaptability.

Video Solution:

Q9 Text Solution:

Key Concept: RER function

Explanation:

RER contains ribosomes externally.

Ribosomes synthesize proteins.

Association enhances efficiency.

Absence of ribosomes defines smooth type.

Statement II contradicts structural feature.

Video Solution:

Q10 Text Solution:

Key Concept: S phase Explanation:

1. DNA synthesis occurs exclusively in this stage.

2. DNA content increases from 2C to 4C.

3. Chromosome number remains constant due to sister chromatid formation.

4. Replicated chromatids remain attached at centromere.

5. This ensures accurate segregation in subsequent division.

Video Solution:

Q11 Text Solution:

Key Concept: Meiotic prophase Explanation:

1. Zygotene shows homologous pairing (synapsis).

2. Pachytene is site of genetic exchange.

3. Diplotene reveals chiasmata formation.

4. Diakinesis shows terminalisation of chiasmata.

5. Ensures recombination and variation.

Video Solution:

Q12 Text Solution:

Key Concept: CO_2 acceptor

Explanation:

Ribulose bisphosphate is a 5-carbon compound.

It combines with CO_2 to form unstable intermediate.

This leads to formation of 3-carbon molecules.

Enzyme involved is RuBisCO.

Central step in carbon fixation.

Video Solution:

Q13 Text Solution:

Key Concept: TCA cycle

Explanation: • Substrate-level phosphorylation produces ATP directly. • It occurs during conversion of succinyl-CoA to succinate. • GTP is initially formed and converted to ATP. • Other steps involve decarboxylation or oxidation. • This is the only direct ATP-generating step in the cycle

Video Solution:

Q14 Text Solution:

Key Concept: Respiratory quotient

Explanation:

• RQ is ratio of CO_2 released to O_2 consumed.

• Carbohydrates yield RQ equal to 1.

• Lipids require more oxygen, so RQ is less than 1.

• Proteins show RQ close to 0.9.

• RQ helps identify type of respiratory substrate.

Video Solution:

Q15 Text Solution:

Key Concept: Growth regulators

Explanation:

1. Auxins promote rooting.
2. Gibberellins increase internode length.
3. Cytokinins stimulate cell division.
4. Abscisic acid helps in stress tolerance.
5. Each regulator has specific roles.

Video Solution: